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**THE SULPHUREOUS BATH**  
**AT SANDEFJORD**  
**IN NORWAY.**

**BY**

**DOCTORS EBBESEN AND HÖRBYE,**  
PHYSICIANS AT THE BATH.



**CHRISTIANIA.**

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**T**he Editors of this book, my friends and colleagues, have requested me to write a few lines as a preface and recommendation of their work, thinking that my name may perhaps be better known in Great Britain and Ireland than their own. Though I do not flatter myself that any words of mine would give more confidence to the authors' introduction of the bathing place at Sandefjord than their own true description of its effects, tried and proved by the experience of many years, still I give my best recommendation with much pleasure to my honoured British colleagues and to the public at large, assuring them that I do not entertain any doubt that they will find the reality responding to the fame that our bathing place at Sandefjord has earned. It is indeed a place for those who wish to be cured, not for travellers for pleasure.

**F. C. Faye M. D.**

Professor at the University of Christiania, and  
Physician to the King.



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There are extant two older works on the bath at Sandefjord, viz. one in the German language by Dr. Thaulow, one of the founders of the bath, at present proprietor of and physician at St. Olaf's steel bath at Modum — and one in the Norwegian language by Dr. Ebbesen, physician at the bath at Sandefjord, both published in 1855. But the bath has since that time been considerably enlarged and improved. Methods of cure have been developed; experience has become richer and more certain, so that a new representation of this bath and its operations will probably be welcome to many. We have preferred this time to write in the English language, in order that the bath may become known, as it deserves, in foreign countries, and particularly in England, whence in the last few years several patients have come to the bath at Sandefjord, and whence a great number of travellers come every year to our country, the magnificent scenery of which attracts the attention of foreigners more and more, so that we may expect still more numerous visitors, when the beneficial operation of the bath in many of the most commonly occurring chronic disorders shall have become sufficiently known.

### **The Authors.**

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## **Sandefjord.**

The little town of Sandefjord, with about 1400 inhabitants, is situated in the southern part of Norway in the province of Jarlsberg and Laurvig, at the end of a little bay in 59,8 N. L., 10,14 E. L. from Greenwich, 27,53 E. L. from Ferro; about 10 English miles from the town of Laurvig, 16 from Tønsberg,

18 from Vallö, and 81 from Christiania. The country is beautiful, and as a summer residence very agreeable; it is moreover provided with excellent roads, and good opportunities of communication with Christiania and all other towns on the coast by means of steam vessels. The town lies on a low, slightly inclined strand, protected on three sides by hills, and only open towards the south where the fjord runs in to a length of 8 English miles. It is excellently adapted for a bathing place, not only by its position and the pure sea-water, but also by its cheerful country-like appearance, clean streets, small neat houses, with gardens to most of them; added to which the town is so small that in the bathing season it is quite dependent on the bathing establishment, to which it mainly owes its origin. The inhabitants are otherwise engaged in trade, navigation, ship building, and fishing.

The climate is mild and agreeable; the air remarkably pure and healthy; the warmth in summer is seldom oppressive, and is always tempered by the south wind, which rules during that season. Foreigners frequently form an incorrect idea of the summer in the south of Norway. We will therefore take the liberty of sketching a few features of it.

The fields begin usually to become green in the beginning of May, but the air is generally still cold, which is looked upon by farmers as an advantage or promise of a good harvest. The summer warmth seldom begins before the end of May, but then rapidly increases. During the whole of June and the greatest part of July one can read nearly all night by the light of the sun, and the singing birds in the woods are silent only a few hours. With these long days vegetation progresses with a rapidity which astonishes many foreigners from the south, and about Midsummer nature appears in her finest bloom. In order to give to the botanist an idea of the progress of spring, we append a note which is the result of seven years observation by Mr. Moe, gardener at the botanical gar-



dens of Christiania, of the wild plants in the environs of that city\*).

To illustrate the meteorological condition of Sandefjord during the bathing season the following observations during three years are noted — (Degrees of Fahrenheit).

\*) In the month of March the following plants flower: *Saxifraga oppositifolia* on the 12th: *Alnus incana* and *glutinosa* on the 23rd: *Tussilago farfara* on the 24th: *Corylus avellana* on the 28th: *Populus tremula* on the 30th:

In the month of April the following: in the first week, *Hepatica triloba*; second week, *Daphne mezereum*, *Tussilago petasites*, *Equisetum arvense*, *Chrysosplenium alternifolium*; third week, several species of *Salix*, *Pulsatilla vernalis*, *Draba verna*, *Arabis thaliana*, *Gagea lutea*; last week, *Carex præcox*, *Viola hirta*, *Poa annua*.

In the month of May we will only name the following: In the first week, *Anemone nemorosa*, *Primula veris*, *Taraxacum officinale*, *Myosotis collina*, *Fraxinus excelsior*, *Viola umbrosa*; second week, *Viola arenaria* and *mirabilis*, *Myosotis sylvatica*; third week, several species of *Carex*, *Pulsatilla pratensis*, *Convallaria majalis*, *Acer platanoides*, *Betula alba*, *Fagus sylvatica*, *Ranunculus auricomus*, *Veronica verna*; last week, *Prunus spinosa*, *Veronica serpyllifolia*, *Fragaria vesca*, *Lonicera periclymenium* and *xylostes*, *Viola tricolor*, *Convallaria polygonatum*, *Cypripedium calceolus*, *Prunus padus*, *Trollius Europæus*, *Pyrus malus*, *Trientalis Europæus*.

In the month of June, among others the following: in the first week, *Pinus abies* and *sylvestris*, *Trifolium pratense* and *repens*, *Berberis vulgaris*, several species of *Lychnis*, *Geranium sanguineum*, *Hieraceum pilosella*; second week, *Orchis maculata*, *Poa pratensis*, *Veronica officinalis*, several species of *Ranunculus*, *Rosa cinnamomi*, *Rubus idæus*, *Vaccinium vitis idæa*; third week, *Linnea borealis*, *Valeriana officinalis*, *Urtica dioica*, *Rosa canina*; last week, *Pyrola minor*, *Arnica montana*, *Rubus chamemorus* and *fruticosus*, and several species of *Campanula* and *Vaccinium*.

The Air.					The Sea.					Rainy Days.		
Means of Temperature.				Max.	Min.	Means of Temperature.			Max.		Min.	
	6 o'clock. Morn.	12 o'clock. Noon.	6 o'clock. Even.	12 o'clock.	12 o'clock.	6 o'clock.	12 o'clock. Noon.	12 o'clock. Even.	12 o'clock.		12 o'clock.	
1859.												
June . . . . .	57	68	66	80	55	65	67	68	72	62	$\frac{1}{2}$ Centim.	3
July . . . . .	59	69	68	77	61	66	67	68	73	61	6	5
August. . . . .	56	67	65	75	61	64	66	67	68	62	$4\frac{3}{4}$	7
1860.												
June . . . . .	55	62	59	77	55	59	61	62	66	55	24	18
July . . . . .	59	68	67	77	61	65	67	67	71	57	7	8
August. . . . .	55	65	63	73	55	62	64	64	70	60	$25\frac{1}{2}$	21
1861.												
June . . . . .	59	70	69	79	60	63	65	68	70	52	$2\frac{1}{4}$	4
July . . . . .	59	68	66	79	59	66	67	69	69	65	14	16
August. . . . .	56	66	64	69	56	65	66	66	66	61	$12\frac{1}{4}$	12

At Sandefjord there are a druggist's shop, a telegraph station, a well organized post; and during the bathing season four steam vessels touch there, one of them three times a week, thus establishing an easy communication with all places along the coast. In the beginning, middle, and end of the bathing season there is direct communication with Sweden and Denmark by means of the Norwegian Post steam vessels touching at Gothenburg and Copenhagen; otherwise the communication with foreign parts is as follows:

1. Sweden and Denmark. A steam vessel runs twice a week between Copenhagen, Gothenburg, Laurvig, Vallö and Christiania.
2. Denmark and Germany. Once a week a steam vessel between Kiel, Nyborg, Frederikshavn, Frederiksværn, Vallö and Christiania.
3. Germany. Every other week the steam vessel between Hamburg, Christiansand, Frederiksværn, Vallö and Christiania.
4. England. Once a week a steam vessel between Hull, Christiansand and Christiania. From Christiansand the passage is continued to Sandefjord by a coasting steamer. From Frederiksværn, Laurvig and Vallö either by a steamer or overland.

## The Bathing Establishment and its Arrangements.

The bathing house was built in 1837, but has been from time to time, especially during the last ten years, considerably extended. It consists now of a long angular one storied building, which, besides a saloon, offices, corridors &c., contains 30 bathing places, wherein upwards of 350 persons can bathe daily. The ordinary bathing places consist of two rooms, one for dressing and undressing, in which are a sofa, articles of toilet &c., and the bathing room properly so called, in which



are the bath, the water pipes for cold and warm water, and apparatus for various sorts of shower baths. The water is warmed in a side building, and the pumps are worked by steam. There is a floating bathing house in the sea, containing 10 bathing places, some of them communicating with the open water for swimmers. Moreover many persons bathe from the shore or from boats. The bathing establishment is the property of a joint stock company. The management is conducted by an inspector, with about 50 bathing servants and common servants; three physicians practise at the bath. Two parks belong to the establishment, and a good musical band plays there. Numerous beautiful walks lead along the sea-shore and among the hills, affording an agreeable variety for pedestrians; and the beautiful environs are excellently adopted for greater and smaller excursions by land and water. It must not be forgotten that the Laagen,\*) one of the richest rivers in Norway for salmon and trout, runs 7 English miles from Sandefjord, and that the great lake Gogsjö, abounding in fish, lies 3 Eng. miles from the town; that the fjord abounds with ordinary salt water fish; and finally that hare and duck shooting in the environs is permitted in the shooting season.

Most of the houses in the town are arranged for reception of bathers. The price for a room with bed and attendance is from Sp. 4 to Sp. 8 (18s to £ 1. 16s) per month, for several rooms together the price is relatively lower. Although there is always a great choice of lodgings, yet the foreigner who intends to frequent the bath would do well some time beforehand to announce his arrival to the inspector of the bath, or to one of the physicians; to state how large a lodging he requires, and to bespeak a bathing hour, which last must not

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\*) The finely situated country-house Stuberud, near the Laagen, has for many years belonged to Englishmen, who reside there every summer, principally for the sake of the salmon fishery.

be forgotten; for, in the same succession as such orders come in, the best vacant bathing hour is appropriated to the coming visitor.

The bathing season begins on the first of June, and ends usually on the last day of August.

With respect to food, dinner may be had at the "restaurants," either at the "table d'hôte" or sent out; the prices vary between Sp. 4½ and Sp. 8 (£ 1 and £ 1. 16s) per month. Breakfast and supper may always be had at the lodgings for Sp. 5 or Sp. 6 (£ 1. 2. 6 or £ 1. 7s) per month.

The prices of the different sorts of bath are as follows:

	sk. Norw.*)
Sea Bath . . . . .	8
Simple Shower Bath . . . . .	12
Warm Sea Water Bath . . . . .	22
Do. with Shower Bath . . . . .	26
Do. with Do. and "douche" . . . . .	34
Sulphur Bath . . . . .	42

Of the last four two baths are given gratis when twenty are taken.

Mud Bath . . . . .	60
Steam Bath . . . . .	48
Steam Shower Bath . . . . .	20
Mud Poultice . . . . .	12

Every bather pays Sp. 2 (9s) for drinking the water, newspapers, music &c. For families an abatement is made.

The expenses for six weeks residence at the bath for a gentleman may usually be reckoned at from Sp. 70 to Sp. 80 (£ 15. 11. 1 to £ 17. 15. 6).

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\*) A Norwegian Specie Dollar is 120 skillings, = 1 Swedish or 1 Danish Speciedollar, = 2 Danish Rixdollars, = 1½ Prussian Dollars, = 3 marks Hamburg Banco. £ 1 Sterling is about 4½ Speciedollars.



## Water drinking and bathing.

The bathers must begin their day early. At 6 in the morning they assemble (fasting) at the spring. Weak and sensitive persons may indeed be permitted to come a little later, or also to take a glass of milk or a little weak coffee beforehand; but as this may easily diminish the effect of the water, it is best avoided. The sulphureous water is then taken in cups — 4 to 6 oz. — slowly and with intervals of from 10 to 15 minutes, the patients walking about constantly; usually the water is taken cold, but sometimes warm, which, as well as the quantity and number of cups &c., depends on the disease, constitution, age &c. Children must be attended to, so that they do not drink too much, as many are inclined to do. Some patients are advised to drink in bed, others to take very small and frequent doses; most of them take 3 cups of 6 oz. After the last they take a brisk walk for an hour, and then breakfast at 7½ or 8 o'clock.

The sulphureous water is not exactly pleasant to the taste, particularly when warm, and therefore sometimes produces qualms in sensitive persons; but the taste is soon got rid of by rinsing the mouth with fresh water. An easier and more copious evacuation is the immediate effect of drinking the water. Two or three abundant and agreeable motions follow in the course of a few hours, and often even earlier. The next effect is improved appetite, and therefore the breakfast is enjoyed. The breakfast is to consist only of coffee, milk, bread and butter.

After breakfast the patients rest a little until bathing time. The most favourable bathing time is between 10 and 12, so that the bath can be taken a few hours after breakfast, and as many hours before dinner. But this can only be the case with a few patients. Each must therefore endeavour to arrange his meals so that there shall be at least 1½ hour between the

meal times and the bath. One hour is allowed for a bath, which is quite enough, but the time should also be fully occupied.

Besides the proper or principal bath many patients are ordered to take others, particularly local baths, as for instance, the steam shower bath, mud poultice, sea bath &c., which are to be taken at some other time of the day.

It is an old and well known rule for patients at bathing places, that, during their residence and treatment, they should lay aside every serious occupation, and carefully seek to avoid bodily and especially mental and sexual exertion. They are only to occupy themselves with their prescribed treatment, and otherwise lead an idle life. Rest must be taken immediately before a bath, particularly if the patient is of a weak temperament, for the bath causes fatigue. In the bath it is well, as far as possible, to help oneself in the brushing and rubbing. In the beginning the physician is often to be consulted, in order as far as possible to have the temperature of the bath regulated according to individuality and condition. In case of shivering under the pouring or shower bath the cistern must not be entirely emptied, but the patient must remain standing in the warm water. The shower bath is always taken spreaded on the breast and abdomen, and is never allowed to fall long on any one point. All such rules the patient must listen to so often that he remembers them exactly, so as to be able to control the bathing servants, who moreover have their special instructions. Ladies with thick hair difficult to dry may use a cap of oiled silk in the bath, but it is better to avoid this. The wiping dry is performed with coarse towels, powerfully employed, so that the skin may become both dry and warm.

After the bath a brisk walk for about an hour should be taken.\*) If it be early in the day and one have a good appe-

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\*) Patients, who cannot walk, are drawn in small carriages to the bath, and to take the air.



tite or be tired, food or rest may be enjoyed with moderation. As a rule sleeping after dinner is only allowed to weak persons. During the period of menstruation the treatment is intermitted. Pregnancy is no absolute impediment to the treatment, unless connected with other circumstances, as disposition to miscarriage, or organic disease, which makes it desirable to avoid bathing. It is natural however that the treatment should often be modified.

Diet plays certainly an important part at a bathing place, as well as in all other medical treatments. There is therefore a regulation as regards food, which all housekeepers must attend to. The dietary regulation is not severe, but spirits, salt, fat, and highly seasoned dishes are forbidden. Only for certain patients a particular and stricter diet is prescribed.

As before said, the bathing season at Sandefjord comprises the three months of June, July and August, and only seldom extends over the first week in September. The duration of the treatment may be estimated at about six weeks. If one choose the last half of the season, it is necessary to arrive at the bath in the middle of July. The first half of the season is usually more agreeable, and for some persons it is also necessary to undergo a subsequent treatment at an iron bath, for instance, at St. Olaf's Bath, or at Eidsvold; and for all persons it is useful to have a part of the summer for recreation. But, with respect to the result of the treatment, the second half of the season stands in no wise behind the first, and has even the advantage that the Medusæ are always to be had, while they seldom appear before the middle of June. This circumstance is for those, who suffer from rheumatic, arthritic, or paralytic affections, a matter of importance in the choice of the time for their arrival at the bath.

Patients who suffer from considerable and complicated affections should always bring with them from their own physician a complete description of their previous medical treatment.

## Method of Treatment.

The means, which are at the disposition of the medical attendants at the baths of Sandefjord, are principally the following: 1. Sea water, 2. sulphur water, 3. mud (Gytje) and 4. Medusæ. The bath was originally established only for sea-bathing, and it is partly owing to an accident that we have come into possession of the other excellent means of treatment.

1. Sulphureous - water. During the building of the bathing house and digging in the earth, water was discovered of a peculiar smell and taste, which Dr. Thaulow, then physician at the bath, on analysis, discovered to be a salt, ferruginous, sulphur water. This water occurs in great abundance in the soil all round the bathing house, which is built on the strand formerly covered by the sea. Here are now established numerous deep, paved wells, wherein the sulphur water is collected, and by subterranean tubes conveyed into the bathing house. The water has been several times analyzed, for instance, by the Swedish Professor Berlin, by Professor Strecker, and by his brother Mr. Strecker, a chemist in Christiania. The last two in 1853 analyzed the sulphur water, the sea water, and the mud, which the next year they made the subject of a program at the university, whence the following description is derived.

Analysis of Sulphur Water. The water is clear, yellowish, with a strong smell of sulphurated hydrogen, neutral reaction, and salt bitter taste. Exposed to the air it becomes milky and precipitates sulphur. In corked bottles there appear after some time black flakes of sulphuret of iron. The specific gravity of the water at  $+ 20^{\circ}$  C. is 1,0155. A pound of water = 16 oz. = 7680 grs. and contains:



## a. Solid components:

Chloride of Sodium . . . . .	129,697 Grains.
— magnesium . . . . .	17,010 „
Bromide of — . . . . .	0,491 „
Sulphate of Potash . . . . .	4,056 „
— of Lime . . . . .	4,471 „
Carbonate of Magnesia . . . . .	5,223 „
— Lime . . . . .	4,182 „
— Iron . . . . .	0,358 „
— Mangan . . . . .	0,062 „
Oxyde of Aluminium . . . . .	0,052 „
Silicic acid . . . . .	0,210 „
Organic matter . . . . .	1,744 „
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	167,556 Grains.

## b. Volatile components:

Carbonic acid . . . . .	4,867 „
Sulphurated hydrogen . . . . .	0,135 „

## c. Besides traces of ammonia, nitric acid, iodetted hydrogen, and boracic acid.

The composition of the sulphur water approaches thus very much to the water in Dobberan, but among other things it has a greater quantity of salts. It has more sulphurated hydrogen, than that of Aix-la-Chapelle, but less than that of Nendorph. The quantity of carbonic acid is more than sufficient to make double carbonates of the single. With a temperature of  $+ 10^{\circ} 3$ , C. in the spring, and with a normal state of the barometer, 1000 volumes of water contain 332,1 volumes of free carbonic acid.

Analysis of the sea water. At a temperature of  $+ 17^{\circ}$  C. and a specific gravity of 1,0114 the sea water of the fjord contains in 1 lb. of water = 16 oz. = 7680 grs.:



Chloride of Jodium . . . . .	83,800 Grains.
— Magnesium . . . . .	11,469 „
Bromide of — . . . . .	0,260 „
Sulphate of Potash . . . . .	3,001 „
— Magnesia . . . . .	3,529 „
— Lime . . . . .	4,952 „
Carbonate of iron . . . . .	0,149 „
Oxyde of aluminium . . . . .	0,025 „
Silicic acid . . . . .	0,103 „
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	107,288 Grains.

Probably the sulphur water is formed from the sea water, and we find by comparison, that the sulphur water contains:

1. More solid components, and more chlorine.
2. A quantity of carbonates, wanting in the sea water.
3. A quantity of organic substances, nearly wanting in the sea water.
4. Much sulphurated hydrogen, wanting in the sea water, but on the other hand less sulphuric acid.

If the sulphur water is produced from the sea water, the latter must either undergo a concentration in the earth, or take up chloride of Jodium, or at various times contain various quantities of salts. Perhaps all three causes operate simultaneously, but it is very probable, that water more or less impregnated with salt runs into the fjord according to the prevailing wind.

**Use of the Sulphur Water.** It is applied internally and externally. The internal use is for many patients a very important part of their treatment. It has been already mentioned under the head of "water-drinking." Externally it is applied in the form of baths, steam baths, steam shower baths, local poultices, and ablution, and also for inhalation.

**Operation.** It is not possible completely to explain the working of the mineral waters, although the chemical combina-

tion may guide us in this respect. We shall therefore confine ourselves to saying, that while using the waters the following is to be observed. Taken in doses of from 4 to 6 oz. three times, it usually produces two or three thin, relieving stools in the course of one or two hours; rarely subsequent looseness. Sometimes the dose named operates too strongly, so that it must be reduced; or incompletely, so that it must be increased, but not generally to more than four cups. One should rather give the water lukewarm, in which manner it is best supported by many persons, and works most powerfully. Sometimes it works best in very small and frequent doses, for instance, two oz., six or eight times. In the beginning of the treatment it cannot always be supported, but is vomited up, causes flatulence, congestion to the head, and dizziness on account of the abundant quantity of gas. In this case it is better to let the filled cups stand for a time in order to let the gas escape. If the flatulence and costiveness continue for a long time, one must seek the help of rhubarb or water injection; moreover the diet must be regulated, which in this case is often in fault. With scrofulous, thick bellied children the sulphur water works excellently, by expelling a quantity of slime and intestinal worms. — The next effect of drinking the waters, when the relieving stools are regular, is an increased appetite and a universal feeling of comfort.

2. The mud, Gytje, is slime mixed with organic matter, of black colour when under water, but of a lighter colour when exposed and oxidized by the action of the air. It is of the consistency of soft soap, fine and greasy to the feel, and smells strongly of sulphurated hydrogen. Its application in the bath has been learned from the bathing place Strömstad in Sweden, but its existence in the fjord at Sandefjord has been long known to the fishermen. It is found in abundant strata in many places in the fjord, and even near the bathing-house. It is dug from the bottom of the sea at a



depth of some feet. It is formed especially in narrow bays, where no out-running rivers or brooks produce currents in the water, and in places, which are not very deep, but always under water. It is found best and purest, where the bottom of the sea suddenly inclines out towards the deep. It has been examined by Professor Erdmann of Leipzic, and lately by Professor Strecker. According to the analysis of the latter its composition is as follows:

Analysis of the Mud. For 100 parts by weight of the mud:

Silicic acid . . . . .	1,39	} 16,29 perCt. in water and muriatic acid soluble matters.
Lime . . . . .	1,31	
Oxyde of iron . . . . .	4,15	
„ aluminium . . . . .	1,25	
Magnesia . . . . .	1,18	
Chloride of sodium . . . . .	4,18	
Potash . . . . .	0,78	
Sulphuric acid . . . . .	2,05	
Organic substance and water	9,91	
Quartz and indissoluble parts	73,80	
	<hr/> 100,00.	

With respect to its composition the mud differs in many points from other deposits of the sea water. The “tangles,” used in Normandy as an important manure, is a different article. According to the analysis of Pierre the sea slime collected on the coast of Normandy contains 24 to 25 p.Ct. of carbonate of lime, but it contains much less organic matter than the Sandefjord mud.

Use and effect of the Mud. It is used partly with and partly without sulphur water and sea water for bathing, rubbing, and local poultices. The effect is to mollify, disperse, and solve.

3. The Jelly Fish, a marine animal well known by fishermen and bathers along the coast, and often very annoying on account of the burning it produces on the skin, forms an

important means of cure at the bath of Sandefjord. It has not been properly ascertained, whether any physician out of Norway has at any time employed this means, the application of which in any case is little known. It has been said, that Dr. Danzemann in Travemunde has had the idea, but more is not known. It is however certain, that Dr. Thaulow, one of the founders of the bath at Sandefjord, is the first, who in this country used the jelly fish, and to whom the credit belongs of having enriched our materia medica with a powerful and effective remedy, which certainly is specially adapted for bath treatment, but can also be otherwise applied with advantage. Dr. Thaulow left Sandefjord a short time after the establishment of the bath, and thus had little opportunity of further testing the new remedy. It was reserved to the future, by means of many years practice and abundant experience, to learn the right method and great advantage of using the Medusa in the treatment of many diseases.

The jelly fish belong to the Acalephans, a class of marine animals, the natural history of which has not yet been minutely studied. The order Medusa is best known, principally owing to the zealous investigations of our celebrated naturalist Professor Sars. This study has likewise occupied the attention of Messrs Forbes, Ehrenberg, Steenstrup, Wagner, and others.

It is the species *Medusa capillata* (Lin.), which is used at our bath. It has a jelly-like, nearly transparent disk-formed body, convex on the upper part, concave below, and furnished with a number of long tentacles, which form a swab. The colour is brown; the disk may be up to one foot in diameter, and the swab many feet long. Another species, *Medusa aurita*, is much smaller, of a beautiful blue colour, but possesses little of the acrid matter, which specially is found in the swab of the former, and which is applied as a remedy. The Norwegian name of the Medusa, "Mandæter," is derived from its well known quality of burning the skin. R. Wagner has discovered



in the outer skin of the Medusa peculiar microscopic organs, which he calls nettle-organs, consisting of oval cells, in which there is found a long fine thread, rolled together and easily protruded. The sharp burning is probably occasioned by these threads, or by some humour adhering to them. The Medusas are often found in July and August in such quantities in our fjords, that in rowing one touches them at every stroke; but occasionally they disappear suddenly for several days. This, in connexion with the circumstance, that they seldom appear before the latter part of the month of June, has occasioned many attempts to preserve this important requisite for bathing; but these attempts have hitherto always failed. It is of no use to attempt to preserve the jelly fish in fish boxes or similar apparatus, for they soon die, and are then without virtue. Dried in the sun or in any other manner, they likewise lose every trace of their burning quality, as we have ascertained by numerous experiments.

Effect. When the jelly fish is brought into contact with the skin, there immediately arises an irritating, pricking, burning sensation, like that produced by stinging-nettles. If this burning be very intense, it soon extends far beyond the touched spot, even to all parts of the body, and is often accompanied by a very remarkable phenomenon, viz. contraction of the muscles, quite like the effect of an electro-galvanic apparatus. Strong contraction of this sort may be accompanied with fever, and may last several hours. The pain can be alleviated by cold ablutions and internal sedatives, for instance, morphia; even by very slight contact the skin becomes red, and is frequently covered with pearly perspiration, and by repeated application on the same place there is produced a red, papulous exanthem, which may remain for several days.

According to this description it is clear, that the jelly fish must be an excellent irritant for the peripheristic nerves; therefore it was first used in cases of paralysis, in which it still



finds its chief application; but subsequent experience has taught us, that it can also operate to regulate other affections of the nervous system, and that, as a powerful counter-irritant, it calms and removes pains. It is therefore especially used in cases of paralysis, neuralgia, rheumatism, arthrocaces, cerebro-spinal irritations, and nervous debility.

## On the peculiar method of bathing, and various sorts of baths.

After having thus given an account of the materials of our bath, we shall explain, how they are applied, and we shall first describe the most important bath, viz.

1. The Sulphur Bath. Mud and sulphur water are mixed together in large reservoirs to the consistency of gruel, with which the bath is half filled. Boiling salt water is added, until the proper temperature of the bath is obtained, usually between 88 and 97 degrees of Fahrenheit. The patient lies in the bath immersed to his neck, and the bathing servant now begins a series of operations, which tend to soften the skin, and thus promote absorption. First he applies the birch; this consists of fine leafy twigs, bound together in a bunch of 12 or 18 inches long. It is dipped in warm water and applied with frequent and vigorous strokes on the different parts of the body, which the patient gradually lifts out of the water. The breast, the abdomen, and some other sensitive parts of the body are not struck, but only rubbed with the leaves. The practised bathing servant never flips with the twigs, but often applies to an adult six or seven hundred strokes in one bath. After the birch large brushes are applied over the whole skin, and in the same order as the birch. All this occupies about twenty minutes. The bath is emptied through a wastepipe; the bather raises himself, and sits on a bench in the bath, and is well rubbed

with warm mud from top to toe, which acts very agreeably on the skin, rendered tender by the birch and brushes. Now comes the spout bath (*Douche*), a stream of salt water, 8 to 10 degrees colder than the bath. The cistern contains 100 gallons, and stands in the loft, so that the pressure is tolerably strong. The water is conducted through a leather hose, which the bathing servant guides with his hand, and directs on all parts of the body, but especially along the back, and on a few suffering parts. Finally another shower bath is taken, which is usually cold; it is of short duration, and then the patient is well dried with coarse linen and woollen towels.

This is the usual mode of bathing, which can be varied according to circumstances. The birch and the brush are sometimes omitted; for instance, where the skin is diseased. The spout and the shower bath are doubled, as in nervous debility, or are applied both at once. The rubbing with mud is repeated partially or on certain parts, where it is necessary to operate more strongly, as with swellings, arthrocaces &c. The temperature of the bath is subject to many modifications, according to age, sickness, and individuality. Much can certainly be effected by the proper application of the relative temperatures of the bath and the spout. Moreover one begins the treatment most frequently with higher temperatures and terminates with lower ones in order to harden the patient.

If jelly fish are to be applied, it is done immediately before or after the drying. The bathing servant takes the living medusa up from the pail of water, in which it is kept, holds it by the disk, and brings a part of the swab in contact with the suffering part, either by a simple touch or by a stroke. It must often be regularly rubbed in, before the burning sensation is felt, viz. when the skin is thick, or in paralytic affections, where its sensibility is blunted. It is seldom used more frequently than every second day, which depends on the case and intensity of the operation.



After the bath the patient takes a good walk for an hour.

2. The Shower Bath consists of a bathing vessel and a cistern with cullender.

3. The Spout Bath. Here the bathing vessel contains only pure sea water; otherwise this bath does not differ in any respect from the sulphur bath.

4. The simple warm Bath is only used as a preparation for the others, or in connexion with a course of diet.

5. The small Spout Bath is cold water, which from a proper height falls in jets of various degrees of force.

6. The Steam Bath is taken either in a room, where warm steam is conducted by tubes, or in certain air-tight cases, in which the patient sits with his head out of the influence of the steam.

7. The Mud Bath. The bathing vessel is filled only with mud, warmed by steam to a temperature of from 90° to 110°, and of the consistency of thick porridge, in which the patient remains for from 25 to 30 minutes under friction. Then he is washed in another vessel with cooler water, and he finally takes a shower bath.

8. The Steam Spout consists of a jet of warm water steam, conducted through a tube on to the suffering part, which, during this process, is continually rubbed with mud. In order to make it more stimulating the steam is sometimes conducted through a case filled with green fir twigs, the resinous parts of which are extracted and conveyed by the steam.

9. The Vaginal Spout is simply an ascending jet of water of various temperatures. The apparatus is found in several of the ladies bathing rooms, and is usually employed immediately after a bath.

10. The Mud Poultice. Warm mud is spread on linen, and is applied locally like a poultice. Large poultices, for instance for whole limbs or for the abdomen, are taken in

special rooms in the bathing house, but smaller poultices, as, for instance, on a knee, foot &c. are most conveniently taken at home, and many patients are ordered to keep them on at night.

11. Inhalation. In the last few years sulphur water has been applied for inhalation in a particular manner. This is done by help of a special apparatus (*pulverisateur des fluids*), by which the water with compressed air is driven out in very minute particles, almost like smoke or steam, which is inhaled. It is applied in chronic affections of the respiratory organs. One of the writers has used it in chronic bronchitis with great success, but otherwise the remedy is still so new, that one dare not positively pronounce an opinion as to its value.

## The Diseases, which require the use of the bath.

The diseases, for which the Sandefjord baths are particularly adapted, are:

Scrophulosis, chronic Rheumatism, Neuralgiæ, Nervous Debility, chronic Exanthems, Arthroace, Diseases of the Abdomen, Liver and Milt, and Paralysis. But Arthritis, Calculi renales, chronic Periostitis, Irritatio spinalis, Chorea, Epilepsy, and other spasmodic diseases, Cardialgia and chronic Gastritis, as well as anomalous menstruation are also treated successfully. The annual report for the last 15 years shows, that of all the cases, treated during that time, 12 per cent. were cured, 54 per cent. considerably improved, 20 per cent. somewhat improved, and 14 per cent remained incurable — a result, which must be called good, considering that in most instances the diseases, which are treated at a bathing place, are chronic maladies, that for a long time have defied all other treatment. It may be well to state the result of the treatment of the following diseases during the said time:

	Either cured or much improved.	Somewhat improved.	Incurable.
Scrophulosis . . . .	86 p.Ct.	10 p.Ct.	4 p.Ct.
Rheumatismus chron. .	76	17	7
Obstructio alvi . . .	80	13	7
Affectio hæmorrh. . .	75	14	11
Plethora abdominal . .	77	23	0
Morbi hepatis . . . .	69	17	14
Debilitas nervosa . . .	68	22	10
Exanthemata chron.. .	67	19	14
Neuralgia . . . . .	59	26	15
Arthrocaces . . . . .	49	30	21
Arthritis . . . . .	55	25	20
Paralysis . , . . .	37	29	34

The attendance at the bath during the last five years may be seen from the following list.

In 1856	the number of patients	was	520
- 1857	"	"	536
- 1858	"	"	500
- 1859	"	"	664
- 1860	"	"	637

## Cases.

We will now refer to some few interesting cases.

### Arthrocaces.

No. 1. Gonarthrocace. Bathing two summers. Cure.

1858, 5th June. A public functionary, aged 41 years, somewhat scrofulous from his childhood, and in later years always palé, and sallow in complexion; had exerted himself much in walking, having a long way to go to his office. About a



year ago the disease began to develop itself in his right knee, and some months afterwards hydarthrus supervened. At present there is a considerable swelling in cond. ext. femoris, some stiffness, some pain, which symptoms are immediately increased by attempting to walk, wherefore he always lies with his lower limbs stretched out on the sofa. The muscular system in the diseased extremity is much relaxed. He looks very weak and exhausted, for he last winter suffered from pleurisy, with considerable effusion in the left pleura. The breast is somewhat fallen in, the cellular respiration obstructed. He has not left his room for 11 months; otherwise he feels pretty well. His digestion is in order. He has used Kali hydroiod<sup>l</sup>, Ferrum, Oleum jecoris aselli &c. Of late Arthro-cace has also developed itself in the right great toe, and Metatarsus with swelling and stiffness, without pain.

Prescribed: Sulphur bath 92°, Spout bath 80°, Shower bath 72°; the knee, the foot, and the breast rubbed in the bath twice with mud. Application of jelly fish on the knee and foot every third day; afterwards steam spout bath on the same place. Mud poultice on the diseased joints at home. To drink 3 four oz. cups of sulphur water; to be wheeled to and from the bath.

30th June. To leave off drinking the water, stop bathing for a week, as the patient's strength is much exhausted. He can now walk a little on level ground with crutches without resting on his right foot, which is supported by a sling over his shoulder.

7th July. Begins again to bathe. After the steam spout bath the knee is very red for a few days. The jelly fish operates feebly.

8th August. Again stopped the bath for a week; good improvement.

29th August. The treatment ceases. He has had 63 sulphur baths, 13 steam spout baths; walks with tolerable ease

on crutches, without supporting himself much on the knee. The knee has now nearly its normal appearance, is sufficiently flexible, the muscular system of the extremity nearly in a normal state.

The next year he came again to the bath. — Looks well; has become plump; walks briskly in the street with the help of only a stick; bends his knee and foot easily; there is still some swelling and stiffness in the great toe.

Prescribed: In every respect as last year. Had 50 baths, and was completely cured without relapse to this day.

No. 2. Gonarthrocace, plethora abdominalis. Bathing two summers. Cure.

1861 June 1st. A woman 56 years old — very corpulent — suffered about 20 years ago from the venereal disease — used Cura Dzondi — and was cured without subsequent appearance of relapse. She was afterwards always well with the exception of some rheumatism; but about one year ago both her knees began to fail and to swell, and she has now lain in bed for eight months. She can just stand on her legs, and with the help of crutches move her feet a little on the floor. Both the knees considerably swollen. — Cond. ext. tibiæ on both legs especially hypertrophic; patella turned much outwards. Pains in moving, particularly in the lower ligament of the patella. Doubtless all the articulating extremities of the bones in both knees are hypertrophized, but on account of her considerable fatness it could not be easily ascertained. Digestion in order.

Prescribed: Sulphur bath 90°; spout bath 80°; shower bath 72° (gradually reduced to 90°—76—65). Both knees rubbed twice with mud in the bath. Steam spout bath every third day. Mud poultice all the night, and occasionally jelly fish on the painful parts. To drink 3 full cups (about 6 oz.). Wheeled to and from the bath. In the course of 71 days she had 60 sulphur baths, 20 steam spout baths; also several times 5 leeches on each knee on account of the pain. On her



departure her great corpulence was considerably reduced. The bloated appearance of the face improved. The circumference of the knees much smaller. She walked with tolerable ease to the bath with crutches, and felt on the whole well.

The next year she came again to the bath. She has occasionally during the winter used compression applied to the knees by the help of plaster capsules. She walks briskly in the street only with a stick.

Prescribed: The same treatment as last year. This time she took 30 baths, and departed almost completely cured. Her knees had their normal shape the patella had resumed its place, and no pain was felt. This lady lives now in the third floor, and walks up and down stairs with tolerable ease.

No. 3. Tumor albus genu, periostitis tibiæ, abscessus plantæ pedis. — Three years treatment. Cure.

1846. An unmarried lady — 31 years old — had been ill for two years; the cause probably refrigerium. Her right knee is occupied by a considerable, smooth, hard, white swelling, extending all down along the shin bone, with constant boring pains across the knee, which are increased by motion. The flexibility of the joint restricted. The left lower extremity suffers from a similar affection, but in less degree, yet the shin bone and the foot are more swollen. On moving the left knee a considerable crepitation is remarked, when the hand is placed thereon. The patient can walk a little in the room with crutches. The menstruation scanty, but regular. Evacuation sluggish.

Prescribed: Sulphur bath 95°, 86°, 70°; double rubbing in on both the lower extremities with mud; mud poultice on the knees in the night; jelly fish; three cups. The sulphur water did not operate very well. Leeches were applied once on account of increased pains in the knee. She bathed for two months and half, but was not much improved.

In the next year there was an evident improvement in all



the phenomena. In the inner edge of both feet there had formed an abscess of congestion, which afterwards broke and discharged a thin secretion. She used the bath in the same manner as last summer; continued improvement. — The third summer on her arrival at the bath the abscesses appeared still to be open; the pains had concentrated themselves round these abscesses, and had abated on all other points. The same treatment as before. Evident improvement. — The next winter she was considered to be completely cured, and is since married.

### Arthritis.

No. 4. Arthritis and calculi renales. Bathing one season. Considerable improvement.

A beer brewer — 45 years old — full blooded, and corpulent from good living; has suffered four or five years from these diseases. Every year in the month of January he gets a violent attack of arthritis in the knees and feet, which confines him for a long time to his bed. At intervals of some months violent pains occur in the region of the kidneys. He observes how a stone from the kidneys passes through the urethra, and finally slips into the bladder, when all pain ceases. The stone is loose and is easily decomposed. The largest stone he has voided was oval, and half the size of a grain of coffee. Digestion in order.

Prescribed: Sulphur bath 92°, 80°, 72° (gradually reduced to 88—77—66). Double rubbing on the back, knees, and feet with mud. Mud poultice on the knees and feet at home. Application of Medusa every second day. Three full cups. — After three weeks the sulphur water was discontinued, and he subsequently drank Carlsbad water.

12th July. The treatment terminates with the 40th bath. The jelly fish has operated powerfully, and the sulphur water has purged him copiously.

In the following summer I spoke with him. During the

past winter he had not had the usual attack of arthritis in the month of January, and since the treatment at the bath he had not remarked the least pain in the back, nor any symptom of stone in the kidneys; yet he sometimes voids gravel with his urine, though in much smaller quantities, than before.

### Debilitas nervosa.

No. 5. 1860. July 4th. An unmarried lady — 18 years old — of weak appearance, and much debilitated by grief and night-watching at a sick bed. She also suffered from periodical nervous headache, obstinate constipation, and on the whole from deranged digestion, also from weak eyesight, owing to reading by candle-light. Menstruation normal.

Prescribed: Spout bath 90°, 80°, 72° (88°, 77°, 66°); mud poultice on the abdomen for one hour; jelly fish on the temples every third day; three cups of sulphur water; afterwards a stream-bath for some weeks.

1st August. Has for ten days suffered from a large carbuncle on the back, which was opened by a cross cut.

19th August. Has had 25 spout baths, and 12 stream baths; departed in a vigorous state. — Half a year afterwards I saw her again. Appearance, humour, and strength much improved, and less headache. Has not required aperients since the treatment at the bath.

### Exanthemata.

No. 6. Eczema chronicum for 15 years. Bathing three summers. Cure.

1858. A young peasant, 18 years old, had suffered from his third year from a very extensive and very inconvenient eczema. Various remedies were at first tried for him, but without avail. When the boy had grown up, he was determined



to try a serious treatment. The eruption occupied the whole of the extremities excepting the hands and feet, and was found also on the neck, the forehead, and over the whole head. The skin on the affected parts was intensely red, covered with dry, white crusts, falling off in quantities. Here and there new eruptions of eczema, as also deep cracks in the skin, which were nearly every where ensanguined. The smarting and itching were dreadful, particularly in the warmth, and left the patient no peace night or day. Digestion tolerably normal.

Prescribed: Sulphur bath 88°, 82°, 72° (86°, 77°, 68°); three full cups. At first neither flogging nor brushing in the bath. — He had in the first summer 40 baths. The water operated well. The skin became cleaner, the itching ceased; but the smarting was sometimes so violent, that it was necessary to bathe him in fresh water, and smear him with oil.

The next year the eruption was much less intense, but equally extended. His state did not now prevent him from working, as before had been the case.

Prescribed: The same treatment as last year. No striking nor brushing. Afterwards a stream bath in addition. He this time took 56 sulphur baths, 20 stream baths, and departed in a very satisfactory state.

Third year. Has since last year found himself so well, that he cannot remember to have been so well before. The eruption has nearly disappeared from the extremities. Only here and there a single papula. The skin has nearly the appearance of having been tanned, it is so full of scars. Only on the forehead, and on the head are there new and old eruptions together.

Prescribed: The same treatment as last year. Sulphur bath in the forenoon; stream bath in the afternoon. He bathed this time about 50 days, and departed in the best health. — Ten months afterwards I saw him and was convinced, that he



might now be considered cured. His skin, which formerly, even on those parts, that were not attacked, had been dry and loose, had regained its normal elasticity. His whole person had become plumper.

It is very usual, that chronic eruptions of the skin become worse after the first eight or ten baths, the smarting, especially, increasing. This was remarked also with this patient every summer he used the bath.

No. 7. — 1858 — 7 June. A middle aged tradesman had for 10 or 12 years suffered from a chronic eczema on both the lower extremities from the ankle to the groin. The case resembled very much the last one described. The itching and pain were so violent, that the man actually cried, as he tore and scratched himself with both hands until the blood came, and his bed was in the morning covered with white scales in great quantity. The skin in the poplitæa and groin was thick and stiff from infiltration, the patient very much emaciated; constant obstruction.

Prescribed: Sulphur bath 88°, 80°, 72° (88°, 77°, 66°), without striking or brushing; three full cups.

12 June. No sufficient effect from the sulphur water. Takes 4 cups. — He took 40 baths, and departed very glad and pleased at the result. The smarting and itching had nearly ceased, the skin was much cleaner. The following spring I heard him say, that he was much pleased with the first year's bathing, but intended to bathe again, as he of course was not cured. He did not however come again to the bath.

### Affectio hæmorrhoidalis.

No. 8. 1857 — 1 June. Government officer — 50 years old — slight and thin. Had for many years suffered from hæmorrhoidal affection with the usually symptoms: pains across the back periodically increasing — confined bowels — heavi-

ness and tightness in the abdomen — congestion to the head; of late he had become very nervous and melancholy — appetite and sleep indifferent.

Prescribed: Sulphur bath 92°, 83°, 72 (90°, 77°, 66°), double friction on the loins and back, poultice along the back one hour daily, three full cups, jelly fish along the back and loins.

The water operated badly at first, and for a fortnight he had to drink it warm, but afterwards he returned to the cold water, which subsequently worked well. The Medusa was applied every third day with considerable alleviation of the pains in the back. He bathed regularly for six weeks, and was obliged to cease from exhaustion. During the treatment he noticed evident improvement in all his symptoms, and when I spoke with him, several months afterwards, he considered himself nearly cured. He ought doubtless to have repeated the treatment.

No. 9. 1860 — 2 June. An unmarried man, 47 years old, tolerably strongly built, but lean, and with yellowish brown complexion — had for many years suffered from an extremely irregular digestion, and occasionally from violent colic. In the autumn of 1858 he was attacked by peritonitis, which reduced him so much, that he did not regain his strength before Christmas time. In August 1859 he again had a violent attack of vomiting and diarrhæa, which at last became bloody, combined with pains in the abdomen. After these repeated illnesses he became very nervous, could scarcely bear to speak, and moreover suffered from constant obstruction. Subsequently pains across the back supervened, with feeling of heaviness in the abdomen, oppressio cardiæ, congestion to the head, and melancholy. In this state he came to the bath.

Prescribed: Sulphur bath 90°, 80°, 70° (88°, 77°, 68°) — double friction on the stomach and back — poultice for one hour on the same places — jelly fish twice a week — three



full cups. He took 40 baths that summer and as many in the next year, and he may now be considered as very nearly cured. After the treatment in the first year he did not require to take any aperients until the month of February.

### Morbi Hepatis.

10. Hypertrophia hepatis, plethora abdominalis, obstructio alvi. Bathing two summers. Cure.

A countryman 51 years old, tolerably corpulent, contracted several years ago a rheumatism with affection of the heart, which required a very long treatment. Two years ago he began to suffer from an affection of the abdomen, feeling a heaviness and pressure, especially in the region of the liver, which swelled considerably, icteric colour, yellowish brown, cloudy urine, obstruction, congestion to the head and breast, vestiges of the old heart disease, molimina hæmorrhoidalia and at last a hypochondriac state of mind. In this state he came to the bath. The abdomen was very voluminous, the region of the heart and the liver tender, the liver considerably enlarged, the complexion icteric, sleep and appetite indifferent. — A few inches under the inferior margin of the liver there was to be felt a little, hard, knotty, moveable, painless swelling of the size of a walnut.

Prescribed: Sulphur bath 90°, 80°, 70° (88°, 77°, 66°) — double friction on the abdomen — jelly fish on the region of the liver — mud poultice on the same place at night — four full cups.

After 40 baths he departed much improved: the complexion more natural, his humour better, the fullness of the abdomen and particularly that of the liver diminished.

The next year, when he again appeared at the bath, his exterior was remarkably improved, as likewise his general state of health. He had during the winter had a number of large



and small boils round his body, which discharged a great quantity of matter\*), to the great relief of the patient. He had then the same treatment as last year, but only required three cups. He took between 20 and 30 baths. In the third year he visited the bath again, in passing that way on a journey, and although he was to be considered as cured, yet he took 10 baths at my request.

11. Hypertrophia hepatis with Symptoms of affection of the brain. One summer's bathing. Cure.

1851. June. A public functionary — 60 years old — of middle stature — had during many years led a sedentary life, and suffered from very considerable obstruction. In the year 1846 he had an apoplectic stroke with much giddiness, distortion of the face, paresis of the left side, and difficulty in voiding his urine, so that it was often necessary to use a catheter. In 1849 and 1850 he could only walk a short distance, and often staggered, particularly on the left side — the urine sluggish, and with a full bladder even involuntary. In the autumn of 1850 after a strong excitement again an attack of dizziness recurring every third day, every other day, and afterwards every day, lasting from some seconds to some minutes particularly in the forenoon, when he was fasting. He always staggered towards the left side; his face was pale, his pulse and pupils without change. After the application of leeches on the temples the dizziness increased. After a few months he improved, and has since been free from dizziness.

On examination of his abdomen the liver was found to extend upwards to between the fifth and the sixth rib. Evacuation sluggish. Complexion pale grey. He trails his left leg a little.

Prescribed: Sulphur bath 90°, 79°, 70°. The region of

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\*) A similar critic process of purification is not seldom observed in persons, who have been treated at the bath, on their return home.

the liver rubbed several times; three cups, mud poultice. — He took about 40 baths, and evidently improved under the treatment. On his departure his liver was reduced to its normal size. The colour of his countenance fresher, and the patient declared himself to be well in all respects.

12. Hepatitis chronica, one summer's treatment. Cure.

1847 Juli 7. A married lady — 42 years old — had in the autumn of 1845 inflammation of the liver with violent bilious diarrhæa and vomiting, pressing pains in the right hypochondrium and cardia, fever, furred tongue, and thirst. She recovered indeed from this acute attack, but her state afterwards become worse.

On examination the liver was found to have risen above the sixth rib, tenderness to the touch in the cardia and region of the liver, qualms, pale yellow complexion, depressed spirits, disturbed sleep, sluggish evacuations.

Prescribed: Sulphur bath 90°, 77°, 70°; three oz. of sulphur water three times. During the treatment nothing remarkable occurred. It was necessary to double the dose of sulphur water. After seven week's treatment the liver was reduced to its normal size. Evacuations and sleep regular. Spirits good. Complexion healthy and fresh. She only felt still some pressure in the right side.

### Morbi lienis.

13. Inflammatio chronica lienis cum hypertrophia. Cure after one season's treatment.

1843. June. The patient, a middle aged man, suffered in January from ague with affection of the spleen, which was the seat of a dull, pressing pain, increased by pressure and inconvenient position. The affected side was evidently rather prominent, and even on arrival at the bath in the month of



June the unpleasant sensation in the left side was experienced, and he could not sit leaning forward without immediate pain. Evacuations sluggish. Occasional dizziness and bleeding from the left nostril. His appearance sickly, complexion grey and earthy. — This sickness in the spleen had lasted according to his account five or six years, but had become much worse after the ague.

Prescribed: Sulphur bath 90°, 82° — no shower bath, but simple pouring of cold water. Double rubbing in on the left side. Three full cups.

He took 40 baths, and found that he had gained considerably with respect to fresh complexion and lively appearance. In the course of the first months after the treatment this improvement increased considerably; he lost the pressing sensation in the left side, and subsequently has always enjoyed good health.

14. Hypertrophica lienis; protracted sickness. Three years treatment. Cure.

1850. June. An unmarried lady — 33 years old — suffered 15 years ago from ague for a year and half, and has never since felt well. Complains particularly of pains, often violent, in the whole of the left side, from the ribs to the hip, outwards towards the back to the os coccygis. Moreover a feeling of weakness and lassitude in the left leg. Sometimes she is obliged to keep her bed. In 1847 these pains occurred by paroxysms with tolerable regularity. — She used many remedies without much effect.

On examination there is observed dull percussion and increased resistance from crista ossis ilei to three inches above the lowest rib, and to a breadth of four or five inches.

Prescribed: Sulphur bath 90°, 79°, 72°. Three half cups Mud poultice in the region of the spleen all the night.

During the bathing constant indisposition, with pains in the side, lassitude and trembling. Evacuations somewhat too



abundant, so that only two half cups were given. Took this year about 40 baths. After the patient's return home some improvement took place.

In the following year she came again to the bath. The same treatment as in the former year. The same number of baths, but this time she found herself very well during the treatment, and was so much improved afterwards, that her health was considered very good for the space of a year, but then the old sickness began to appear again, and in 1854 she again came to the bath. The result of the treatment this time was very good, and subsequently the patient has always been quite well.

### *Irritatio spinalis.*

Of the class of disorders bearing this name many of the ladies, who visit our bath, are sufferers.

15. A married lady — 27 years old — tall and thin — had been sickly from her childhood, and suffered from spinal irritation from her 11th year, when menstruation began. She had for many years had an eczema on her hands, neck, and face, and convulsions of the nature of St. Vitus's dance, particularly on the right half of the body. Only one childbirth. Menstruation most frequently painful and irregular. Constant leucorrhæa. The uterus tumefied. Nearly always pain on voiding the urine, and in the back when she moves her arms. Strong palpitations, some cough, occasionally with bloody expectorations. Digestion tolerable.

Prescribed: Sulphur bath 90°, 82°, 70° (88°, 77°, 66°) — cold vaginal douche — jelly fish along the back — mud poultice on the same place at night — three cups.

This sensitive patient could not well bear the sulphur bath, which usually diminishes the strength. She had therefore only 20 sulphur bath, and afterwards 20 spout baths of the same

temperature. Once all her skin swelled, and a new eruption of the skin disease was apprehended, but did not take place. Her health improved much. All morbid phenomena decreased, and her medical attendant announced in the next year, that she had obtained a good result from the treatment at the bath.

In the treatment of irritatio spinalis mud poultice on the back at night is usually prescribed. Long, narrow bags of thin stuff are filled with warm mud, and thus applied with great advantage. The patient soon becomes accustomed to sleep well on this cushion.

### Paralysis.

#### 16. Hemiplegia — Bathing one season — Cure.

1860 — 19 July. A young sailor, of powerful frame, had an apoplectic stroke on board, and became speechless, while the right arm fell powerless. After 12 hours sleep he felt himself restored for a short time, but the symptoms soon appeared again to the same extent as before. He was speechless for three weeks, and was a fortnight at sea before he came under medical treatment. On his arrival at the bath, seven weeks after his first attack, he could only speak slowly, and with effort. His arm was weak, the hand entirely without strength, but the sensibility was unimpaired. He asserted, that he had never suffered from syphilis, nor had used mercury.

Prescribed: Sulphur bath 92°, 82°, 70° (88°, 77°, 66°); double rubbing in on the back of the neck and arm; jelly fish every other day; mud poultice one hour daily; no water drinking. 22 July. He states that he has formerly suffered from rheumatism in a high degree. 30 July. To-day during the bathing his arm suddenly become quite powerless, so that he could not lift it; but this dangerous phenomenon disappeared again before the evening. For patients, whose brain is affected, drinking the water may be very injurious, as it may pro-



duce congestion to the brain and dizziness. Therefore this patient was not to drink the sulphur water. He had however drunk it for a few days when this case occurred.

2 August. He is to take also a spout bath every other day.

26 August. The treatment ceases. He has taken 38 sulphur baths, 12 spout baths, and several times jelly fish. He speaks with perfect ease. The arm and the hand have regained their full strength. He has danced, and participated in all social pleasures. — Half a year afterwards I heard from him indirectly. He did not think he required to repeat the treatment.

17. Paralysis cum atrophia in the left arm and leg after a blow in the back. One summer's bathing. Cure.

1851 — 12 June. A public functionary, 37 years old. In 1848 received a violent blow on the left side of his spine, just above the lumbar region, from which resulted debility in the left arm and leg. A year afterwards there supervened rather suddenly after a cold paralysis in the said extremities and violent nervous pains. On arrival at the bath the said parts were much atrophized, and were the seat of violent pains, which prevented him from sleeping. He dragged his leg after him. The arm was quite powerless. The digestion normal.

Prescribed: Sulphur bath 90°, 77°, 65°. Double rubbing in on the back, arm, and leg. Medusa every day.

After 12 days bathing he once on his own responsibility took the medusa in a much greater quantity, than prescribed; the consequence was violent pains in the back, particularly on the place where the blow had fallen. In the night the pains increased in a high degree, and he did not fall asleep until the morning. But in the forenoon on the arrival of the medical attendant the pains had ceased, and he exclaimed, "I have suffered much, but not too much, for I am cured," and immediately he proved, that his former strength in the arm and leg was restoren. The parts which had been rubbed with



the jelly fish were as if bathed in perspiration. He continued the bathing. The former symptoms occurred subsequently again, but in a much slighter degree. He took 40 baths, and in the following year he reported, that since Christmas his improvement had continually progressed, so that he was now completely cured.

38. Paralysis in the right lower extremity, of rheumatic origin. One summer's bathing. Cure.

1848—15 July. A young student about three years ago, after having taken a violent cold, was attacked by periodical rheumatic pains in all his limbs, to which was added lameness in the right lower extremity, so that he could only drag himself along with the help of a stick. Sensibility was unimpaired. On pressing the sixth to eighth spinal vertebra pain was produced, which extended forwards, and occasioned dyspnæa. Sleep middling. Evacuation sluggish.

Prescribed: Sulphur bath 90°, 72°, 68°, medusa, two cups.

After the first application of the medusa violent pains occurred along the whole of the lower extremity. The skin was affected with itching, papulous eruption, and was bathed in perspiration. This local perspiration, which was confined to the part touched by the medusa, lasted a long time, and the pain continued nearly all the night. But the day afterwards nearly every trace of lameness had disappeared. This improvement continued. He bathed for six weeks, and used the jelly fish with caution. Even during the treatment he could take good long walks, and afterwards became completely cured.

### Neuralgia.

19. 1859 — 22 June. A woman 53 years old, tall and thin, much debilitated by numerous childbirths and many illnesses. Has for many years suffered from paroxysms of nervous headache, with dizziness and vomiting, which alternating

with cramps in the stomach keep her in bed for many days. The sickness has become worse since the menstruation ceased. Evacuation sluggish, sleep disturbed, feet frequently cold.

Prescribed: Sulphur bath 88°, 82°, 77° (88°, 77°, 66°); double spout; mud is rubbed in on the head with brushes; jelly fish on temple and on the back of the neck; three cups.

She took 40 baths, and improved considerably. The paroxysms became more rare and less violent. The sulphur water operated very regularly, the jelly fish once too strongly. — The next year she again took 40 baths. The attacks of vertigo were now so mild, that the vomiting did not occur, and she felt her nerves much strengthened. She bathed again for a short time in the third year, and we had occasion to see, that she was to be considered as essentially cured.

20. A married lady, 40 years old, who had never been pregnant, but menstruated regularly; had for many years suffered from a violent neuralgia capitis, which proceeded from a point just over the left eyebrow, which point however was not tender to the touch. The neuralgia usually occurred twice in the course of a month, lasted for a few days, and was accompanied with qualms and vomiting. When the attack ceased, the appetite was voracious. She suffered moreover also from rheumatic headache. When the neuralgia occurred at the same time as the menstruation, the pain was always most violent.

Prescribed: Sulphur bath 90°, 80°, 70° (86°, 75°, 64°); brushing with mud on the head; jelly fish; three cups. She took 40 baths in the course of six weeks. During a similar period she usually had two or three attacks, but now the attack did not occur, until the sixth week. Sometime before she had remarked the symptoms of an attack, which disappeared again after a bath. At last the neuralgia came, but milder and shorter than usual, and without vomiting. It was then eight weeks since the last attack. She had never before en-



joyed so long an interval of rest. This patient will certainly come again to the bath, as the cure must be considered far from complete; but the history of her treatment is already a good proof of the virtues our bath possesses.

21. Neuralgia facialis. Bathing three seasons. Considerable improvement.

1850 — 20 July. A middle aged public functionary had for many years been sickly, hypochondriacal, and unfitted for continued work; evacuation irregular. Two years ago he began to suffer from violent neuralgia in the right temple, eye and cheek, and down the throat. The pain did not follow any particular nerve. In the first year the pains were milder, but afterwards became more intense and constant, and seemed to proceed from a cheek-tooth. But when this tooth was drawn, the pains began in the next. — On his arrival at the bath he was very unhappy on account of his sufferings, and of the total inactivity, to which his sickness condemned him. Evacuation sluggish.

Prescribed: Sulphur bath 90°, 81°, 68°, double friction on the temples and cheek; jelly fish; three half cups. — He took about 40 baths. The dose of sulphur water was increased to four cups. The medusa worked powerfully, and with local perspiration. During the treatment he found himself tolerably well, after his return home again worse; and this varied thus for some time, but after the new year a constant improvement began, so that he could begin to work.

In the following year he came again. The pains were less intense. Sleep and digestion much improved. He bathed in the same manner as before. In the following winter he was able to go through his rather fatiguing business without becoming worse in health. — When he came to the bath in the third year the pains, which had been before so tormenting, were changed to a simple rumbling in the face and cheekbone. This did not disappear entirely after the third year's bathing,



but did not inconvenience him much. He attended to his business, participated again in the duties and pleasures of social life, eat and slept well, and in short was considerably improved.

This case is worthy of remark. The so called Fothergills Neuralgia facialis, of which this man suffered, is so violent and obstinate a disease and recovery is so rare, that the successful operation of the bath treatment is worthy of note. One has likewise here an express proof, that the physician is justified in speaking of the after-effects of the treatment, which frequently do not appear until several months after the treatment is over.

22. Neuralgia ischiatica, affectio organica uteri. Three seasons bathing. Cure.

1846 — June. A woman, 38 years old, had for 10 years suffered from neuralgia in the left hip and leg. It was sometimes very violent, when she was sitting; was increased by pressure on the trochanter major, and sometimes accompanied by small convulsions in the limb and by want of feeling. No lameness; menstruation normal. She has two children. In the spring she began to suffer from a pressing sensation in the pelvis. The uterus was much swollen, oblique and descended. On the labium post. uteri there was a knot of the size of a hazel-nut, but neither hard nor ulcerated. This state was nearly unchanged on her arrival at the bath.

Prescribed: Suphur bath 95°, 86°, 77° (90°, 77°, 66°); medusa; three cups.

The medusa operated so strongly, that it could only be applied a few times. No remarkable improvement in the first summer. — In the next year the knot on the uterus was away; the labia uteri even and without pain, and the uterus moveable. This year she supported the jelly fish better. Some improvement. — In the third year she supported the jelly fish very well, and applied them diligently. The next winter her

medical attendant reported, that the uterus was in its normal state, and that the neuralgia had entirely disappeared.

### Chronic Rheumatism.

23. — 1859 — 3 July. A young lady, well formed and of strong constitution, had always been in good health until 4 or 5 years ago, when she contracted a rheumatism, which subsequently has always reappeared on the slightest occasion.

In the course of the last three years she has twice suffered from acute articular rheumatism, the last time accompanied by endo-and pericarditis, as well as pleuritis with considerable effusion in both lungs. Her functions are in order.

Prescribed: Sulphur bath 92°, 83°, 74° (90°, 79°, 70°); breast and hips rubbed in twice; jelly fish; three cups. As she was very chilly and shivered under the spout it was ordered, that the spout and the shower bath should be taken at once, in which manner the former is better supported. — She took 40 baths, and the next winter found herself so well, that her medical attendant was nearly obliged to threaten her to induce her to repeat the treatment the following year. Subsequently she has been entirely cured of rheumatism, and of her former disposition to be attacked by it.

24. An elderly peasant, of powerful frame, had for many years suffered from rheumatism, and twice from rheumatic fever. Of late years this disease had concentrated itself in both feet, where all the joints were knotty, swollen, and stiff, while the soles of his feet were as thick as cushions, the seat of constant pains, and so tender that he could neither wear shoes nor walk. On his hands the knuckles were likewise swollen from chalky deposita.

Prescribed: Sulphur bath 92°, 82°, 72° (90°, 79°, 68°); mud poultice in the night; jelly fish and steam spout alternately every third day; three half cups.



After the first year's bathing (40 baths) he was already evidently better, and could walk pretty well. This improvement increased afterwards, and in the next year, when he had repeated the treatment, all the joints, which had been attacked, were fine, flexible, and free from pain; in short, the man was cured.

25. Rheumatismus chronicus, vitia organica cordis, menstruatio difficilis. Bathing three seasons; considerable improvement.

A married lady, 28 years old, slightly formed, and not strong, never pregnant, had eight years ago suffered from rheumatic fever, and since that time never been free from rheumatic pains. For three years she had lived in the north of Norway, in which raw climate the disease had become worse. At present she suffered particularly from headache, weakness of sight, constant pains in the region of the heart, strong buzzing at the first sounds of the heart, bad appetite, sluggish evacuation. After meals she always had pains in the left side of her stomach. The catamenia had always been scanty and painful; the vagina unnaturally narrow, collum uteri atrophic, the internal orifice narrow, but the cavity of the uterus free.

Prescribed: Sulphur bath 90°, 81°, 72° (90°, 77°, 68°); double friction on the back and abdomen; poultice on the abdomen one hour; warm vaginal spout (86°, 95°); three half cups.

After three weeks bathing there occurred an abundant miliaria accompanied by fever, which ended after six days with abundant bran-like desquamation. She began again to bathe, but after some time there occurred a new eruption, which did not last long.\*) This summer she took 37 baths.

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\*) The so called bathing rash, a miliaria rubra, appears occasionally among the bathers but seldom twice on the same person. It is considered to be a consequence of the effect of the bathing on a fine and sensitive skin.



The next year she again came to the bath. With the exception of one rheumatic attack she had in the mean time found herself very well, and was in many respects considerably better. The catamenia were regular, although still painful; the digestion and sleep better. — Same treatment. 40 baths. — The third year she was very well. The pains in the stomach after ingestion had been one of the most obstinate phenomena, but these also were much diminished. The abnormal sounds of the heart were, as might be expected, unchanged. She took more than 40 baths, and departed considerably improved; complete cure could not be expected in this case. She has since become pregnant for the first time after being married six years.

### Scorbutus.

This disease seldom appears at the bath, but in 1858 one case was treated with success.

26. It was a very corpulent man, 42 years old, an incorrigible drunkard. There were swollen gums easily bleeding, frequent bleeding of the nose, bad teeth, large ecchymoses on the legs and in the mouth, universal lassitude, moreover erythema nodosum on the legs with pains, stimulating prickings and sensation like the creeping of ants and chillness. Digestion tolerably normal.

Prescribed: Sulphur bath 93°, 81°, 72° (90°, 77°, 66°); no brushing nor striking on the places where the eruption appears; four cups; gargling of sulphur water.

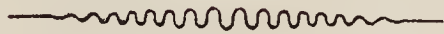
On account of debility, and partly from laziness he took only 24 baths, about half the proper number, but nevertheless the result was very good. After two months he got rid of the chilly sensation, the creeping of ants, the ecchymoses, the debility, and of the whole cachectic appearance. The drinking of the water operated as a strong aperient, and certainly contributed in a great degree to the cure.

## Tumor retroperitonæalis.

27. A young lady, married two years, without children, had formerly been always well. A year ago had a rheumatic fever, and subsequently had suffered constantly from rheumatic pains; has had two miscarriages with great loss of blood; has afterwards had fluor albus and descensus uteri.

The catamenia very irregular. Six weeks ago fever, violent pains in the abdomen, tenderness on pressure, qualms and vomiting. The pains were concentrated in the regio iliaca sinistra, and there had formed a round, hard, immovable tumour, which was tender on pressure, and painful during evacuation. On her arrival at the bath it was as large as a duck's egg; evacuation sluggish, appetite little, humour, strength, and appearance bad.

Prescribed: Sulphur bath 90°, 81°, 72° (90°, 77°, 66°); double rubbing in on the abdomen; mud poultice on the same place at night; three cups. — After one month's bathing the swelling was not perceptible. Her health has subsequently in all respects been good. Immediately after her return home she became pregnant, and has since given birth to a healthy child.



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